

AMENDMENTS TO THE DRAWINGS

The attached "Replacement Sheets" of drawings include changes to Figures 1, 2A, 2B, 2C, 3, 4, 5, 6, and 7. The attached "Replacement Sheets" which include Figures 1, 2A, 2B, 2C, 3, 4, 5, 6, and 7, replace all of the drawings submitted in the Preliminary Amendment submitted March 30, 2004 including Figures 1, 2A, 2B, 2C, 3, 4, 5, 6, and 7.

Attachment: Replacement Sheets (Pages 7)

REMARKS

Claims 1-8, 12-18, 20-24, and 26 are now pending in the application. Claims 1, 5, 6, 8, 12, 13, and 14 have been amended. Claims 9-11, 19, and 25 have been cancelled as the subject matter has been incorporated into other claims. Minor amendments have been made to the specification and claims to simply overcome the objections to the specification and rejections of the claims under 35 U.S.C. § 112. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

DRAWINGS

Applicants have attached revised drawings for the Examiner's approval. Figure 1 includes a "Prior Art" label. The reference character angle β has been removed from Figure 4. The appropriate shadings have been added, where necessary to Figure 2A, 2B, 2C, 3, 4, 5, and 7. No shading has been added to Figure 6 as Figure 6 depicts a geometry of the system and does not include the various types of materials. Withdrawal and removal of the drawings objections are respectfully requested.

CLAIM OBJECTIONS

Claims 6, 13, and 14 are objected to because of the following informalities: in these claims, insert "to" after "perpendicular". Claims 6, 13, and 14 have been amended to include "to" after "perpendicular". Withdrawal and removal of the claim objections are respectfully requested.

REJECTION UNDER 35 U.S.C. § 112

Claims 1-7, 11-17, 19, 22, and 25 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. In view of the amendments and argument herein, this rejection is respectfully traversed.

Claims 9-11 and 19 have been cancelled. Claims 1, 5, 8, 12, and 21 have been amended to include further define the double curved surface. Examiner asserts the definition of a "double curve" as being S-shaped. Applicants respectfully traverse the assertion. As stated in the Specification, at least at Paragraph 0023, the double-curved surface has two radii of curvature which are generated by revolving a curved line about the axis A, which is the axis of revolution or symmetry. The Figures are a partial view of the engine block, but as depicted in Figures 2A-2C, and 3-6 the double-curved surfaces 114 are part of a sphere or a toroid which rotates about the A-axis, per the specification at least at Paragraph 0023. The double-curved surface in conjunction with a sphere or a toroid is a continuous circular surface, which is different from a cylinder which contains a distinct curved surface and distinct non-arcuate or flat regions. Accordingly, claims 1-7, 11-17, 19, 22, and 25, as amended point out and distinctly claim the double-curved surfaces within the engine block. Withdrawal and removal of the rejections are respectfully requested.

REJECTION UNDER 35 U.S.C. § 102

Claims 8-10, 21, 23, 24 and 26 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Helgesen et al. (U.S. Pat. No. 5,771,955). Claims 8-10, 21, 23, 24, and 26 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Baranzke (U.S. Pat. No. 6,363,995). Claims 8-10, 21, 23, 24, and 26 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Singer et al. (U.S. Pat. No. 6,527,040). This rejection is respectfully traversed.

As amended, the claims include a double-curved surface where the double-curved surface forms one of a spherical surface or toroidal surface about an axis. Baranzke discloses a casting mold for producing an engine block having multiple cylinders where the liner is in gliding contact with the mandrel until thermal expansion. Helgesen discloses a method for manufacturing engine blocks having recessed cylinder bore liners. Singer et al. discloses an engine block mold package having a plurality of barrels each having a cylindrical bore liner and a water jacket slab core on the barrels. None of the references disclose Applicants' double-curved surface where the surface forms a sphere or toroid about the axis of the cylindrical liner. Baranzke, Helgesen, and Singer all disclose only cylindrical bore containing engine blocks and do not disclose having a mold seat comprising a double-curved surface which is spherical about an axis. Furthermore, in the §103 rejection, Office Action paragraph 13, the Examiner states that "Neither Helgesen et al., Baranzke, nor Singer et al. discloses a mold seat with a "double-curved" surface.

Because Baranzke, Helgesen, nor Singer individually teach or disclose each and every element of Applicants' claimed invention as amended, the §102 rejections are improper. Withdrawal and removal of these rejections are respectfully requested.

REJECTION UNDER 35 U.S.C. § 103

Claims 1-7, 11-20, 22, and 25 insofar as definite (in view of the 35 USC 112, 2nd paragraph rejections) are rejected under 35 U.S.C. 103(a) as being unpatentable over any one of Helgesen et al., Baranske, or Singer et al. in view of Helgesen (U.S. Pat. No. 5,320,158). This rejection is respectfully traversed.

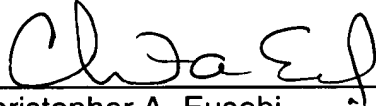
As stated above herein none of Helgesen et al., Baranzke, or Singer et al. disclose or suggest a double-curved surface where the surfaces are spherical or toroidal about an axis. The addition of the Helgesen '158 reference does not remedy the shortcomings of the other references. The Helgesen reference depicts only partially curved surfaces or curved tips upon surfaces of the engine block. Applicant respectfully asserts that all curves are not spheres or toroids when rotated about an axis. Examiner makes reference to various figures to show that curved regions are present, but as depicted in the Helgesen '158 reference, Figure 8 and supported by the Helgensen '158 Specification, the block only provides a curved or rounded region at the distal end of element 608 and does not provide a sphere or toroid providing element used for the mold seat. Accordingly, the §103(a) rejection is improper. Withdrawal and removal of the rejection are respectfully requested.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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